

L Number	Hits	Search Text	DB	Time stamp
1	700	sato-yasuhiro.in.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/02/25 14:01
2	289309	liquid adj crystal	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/02/25 14:02
3	865755	protrusion projection	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/02/25 14:02
4	585879	fold\$5	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/02/25 14:03
5	330821	u-shaped (u adj shaped)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/02/25 14:04
6	7197	fold\$5 near10 (u-shaped (u adj shaped))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/02/25 14:04
7	269	(protrusion projection) same (fold\$5 near10 (u-shaped (u adj shaped)))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/02/25 14:05
8	1	(liquid adj crystal) same ((protrusion projection) same (fold\$5 near10 (u-shaped (u adj shaped))))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/02/25 14:05
9	729	(protrusion projection) same fold\$5 same (u-shaped (u adj shaped))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/02/25 14:08
10	29377	349\$.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/02/25 14:06
11	10	((protrusion projection) same fold\$5 same (u-shaped (u adj shaped))) and 349\$.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/02/25 14:06
12	21643	(protrusion projection) same (u-shaped (u adj shaped))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/02/25 14:08
13	29	349\$.ccls. and ((protrusion projection) same (u-shaped (u adj shaped)))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/02/25 14:11
14	940	coupl\$3 near10 frame near10 (u-shaped (u adj shaped))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/02/25 14:12

15	0	349\$.ccls. and (coupl\$3 near10 frame near10 (u-shaped (u adj shaped)))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/02/25 14:12
16	0	(liquid adj crystal) same (coupl\$3 near10 frame near10 (u-shaped (u adj shaped)))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/02/25 14:12
17	5	(liquid adj crystal) and (coupl\$3 near10 frame near10 (u-shaped (u adj shaped)))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/02/25 14:14
18	85	(liquid adj crystal) same frame same (u-shaped (u adj shaped))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/02/25 14:14
19	8	(protrusion projection) same ((liquid adj crystal) same frame same (u-shaped (u adj shaped)))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/02/25 14:16
20	1	sato-yasuhiro.in. and 349\$.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/02/25 14:17
21	451	349/58.ccls.	USPAT; US-PGPUB	2003/02/25 14:17
22	54	(u-shaped (u adj shaped)) and 349/58.ccls.	USPAT; US-PGPUB	2003/02/25 14:17
23	13	("4165607"   "4422728"   "4950072"   "5137488"   "5274486"   "5570267"   "5659376"   "5675396"   "5703665"   "5867235"   "5946061"   "6064453"   "6125030").PN.	USPAT	2003/02/25 14:20

## \*NOTICES\*

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- 2.\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention relates to the holder of the flat-surface display suitably used in the manufacturing process and transportation process of the penetrated type flat-surface display used as display meanses, such as for example, a table-top-type word processor, a navigation system for mount, and video tape recorder one apparatus television.

[0002]

[Description of the Prior Art] Drawing 16 is the perspective diagram showing the conventional holder 61. Moreover, drawing 17 is the perspective diagram showing the rear face of the display 71 held at the aforementioned holder 61. A holder 61 is constituted including the attachment components 62 and 63 of a couple, and display 71 is pinched between the attachment component 62 of the couple concerned, and 63. One side side 62b of the attachment components 62 and 63 of a couple and 63b are connected by the hinge region 64. the stop of the couple mutually stopped by the front faces (henceforth a "pinching side") 62a and 63a of the side which pinches the display 71 of attachment components 62 and 63 -- members 67 and 68 -- on the other hand -- a stop -- a member 67 and an another side stop -- the member 68 is formed, respectively moreover, the stop of the couple mutually stopped in the other side sides 62c and 63c of an opposite side in the one side sides 62b and 63b in which the aforementioned hinge region 64 was formed -- members 69 and 70 -- on the other hand -- a stop -- a member 69 and an another side stop -- the member 70 is formed, respectively Moreover, openings 65 and 66 are formed in the field corresponding to the viewing area of the display 71 pinched of attachment components 62 and 63, respectively.

[0003] A liquid crystal display realizes and display 71 is equipped with the tape career package (henceforth "TCP") 74 which carried the IC (Integrated Circuit) chip 73 for driving the liquid crystal display panel 72 and the aforementioned liquid crystal display panel 72 which have viewing-area 72a as shown in drawing 17 , and the hard circuit board 75. The terminal for inputting the signal for a display is pulled out by the periphery section of the liquid crystal display panel 72, and the end-connection child of TCP74 is connected to the terminal concerned. TCP74 is arranged between the liquid crystal display panel 72 and the hard circuit board 75 arranged at the periphery section by the side of the screen of the liquid crystal display panel 72, and as mentioned above, while connecting with a liquid crystal panel 72 electrically, the hard circuit board 75 is connected electrically. From the hard circuit board 75, the signal cable 76 realized by the flexible wiring substrate is pulled out, and the signal for the aforementioned display is supplied from an external circuit through the signal cable 76 concerned.

[0004] As such display 71 is shown in drawing 16 , where the attachment components 62 and 63 of a holder 61 are opened, on the other hand, it arranges on pinching side 62a of an attachment component 62, and the another side attachment component 63 is closed. a stop -- members 67 and 68 and a stop -- display 71 is held by stopping members 69 and 70 at a holder 61 Since the aforementioned openings 65 and 66 are formed in attachment components 62 and 63 at this time, viewing-area 72a of the viewing area 72 of display 71, i.e., a liquid crystal display panel, is exposed.

[0005] The holder 61 of such composition is proposed by Japanese Patent Application No. No. 328885 [ five to ] by this applicant, and is suitably used in a manufacturing process, a transportation process, etc. of display 71. For example, in the inspection process which inspects the display property of the display 71 which is one process in a manufacturing process, it is used as follows.

[0006] It arranges on the light source of the test equipment for which the display 71 held at the holder 61 is prepared in inspection. At this time, the another side attachment component 63 of a holder 61 is turned to the aforementioned light source side, and is arranged. Incidence of the light from the light source concerned is carried out to viewing-area 72a from the opening 66 of the another side attachment component 63, and, on the other hand, outgoing radiation of the light which penetrated the liquid crystal display panel 72 is carried out from the opening 65 of an attachment component 62. A checking signal is given through the aforementioned signal cable 76, and a display state is inspected. By this, even if a mechanical strength is low display comparatively, handling becomes easy and working efficiency improves. Moreover, breakage of display decreases. Therefore, a manufacturing cost decreases.

[0007]

[Problem(s) to be Solved by the Invention] For example, display is used, in the display with which the miniaturization of the configuration and thin form-ization are demanded in recent years, and a table-top-type word processor, the navigation system for mount, video tape recorder one apparatus television, etc. are carried in such electronic equipment, a miniaturization and thin form-ization are demanded similarly. Moreover, from this, display with the large ratio of the viewing area to the gross area by the side of the screen of display, i.e., display with a comparatively small area of the periphery portion of viewing-area 72a in which

TCP74 mentioned above and the hard circuit board 75 are formed, is called for.

[0008] The display with a comparatively small area of the aforementioned periphery portion uses a flexible wiring substrate for connection between a display panel and the hard circuit board, is crooked in the flexible wiring substrate concerned, and when the screen of a display panel arranges the hard circuit board to an opposite side, it can be realized easily. Moreover, the miniaturization of display and thin form-ization are easily realizable in penetrated type display which was mentioned above by using an edge light type back light module instead of the back light module of a direct viewing type. Although, as for the back light module of a direct viewing type, the light source is mostly arranged to the field corresponding to the whole surface of a viewing area, as for an edge light type back light module, a miniaturization and formation of a thin form of a viewing area which were mentioned above since it led to the whole surface mostly can realize light from the light source with a comparatively thin light guide plate etc.

[0009] In addition, in transparency [ in the case of having arranged the hard circuit board to the opposite side with the screen using a flexible wiring substrate which was mentioned above ] type display, a back light module is arranged between a display panel and the hard circuit board so that the light from a back light module may be irradiated all over a viewing area.

[0010] Thus, more, when inspecting a display state which holds the display before incorporating a back light module in a miniaturization and the display which attained thin form-ization more by the aforementioned holder 61, and mentioned it above, with the screen, the light from the light source of test equipment is shaded by the hard circuit board arranged at the opposite side, and un-arranging [ that light is not uniformly irradiated all over a viewing area ] arises by it.

[0011] Therefore, in this case, display must be demounted from a holder 61 and must be inspected, and when a mechanical strength is comparatively low, there is a possibility that display may be damaged. Moreover, it must be dealt with so that it may not damage, and working efficiency falls. Furthermore, these cause the increase in a manufacturing cost.

[0012] The purpose of this invention is offering the holder of the flat-surface display which handling becomes easy and can prevent breakage.

[0013]

[Means for Solving the Problem] The display panel which has the viewing area which defines this invention beforehand, and the drive circuit board which carried the drive circuit which gives a status signal to the aforementioned display panel, Have the flexible substrate which arranges the aforementioned drive circuit board to an opposite side with the screen of a display panel, and connects the drive circuit board and a display panel concerned electrically, and the screen of the aforementioned display panel arranges the light source to an opposite side. In the holder of the flat-surface display which displays by penetrating / intercepting light from the light source concerned the aforementioned holder It has the attachment component of the couple which is arranged with the screen [ of a display panel ], and screen side concerned at an opposite side, respectively, and pinches flat-surface display. The attachment component located in the screen side of a display panel of the attachment components of a couple The field corresponding to the aforementioned viewing area is a \*\*\*\* field. either of the attachment components of a couple an attachment component the stop of the couple stopped mutually [ when the attachment component of a couple has been arranged face to face ] -- either of the members -- by the attachment component of the aforementioned couple, when it has a stop member, an another side attachment component has an another side stop member and the stop member of a couple is stopped The screen of a display panel is the holder of the flat-surface display characterized by forming the insertion mouth for inserting the light source in an opposite side. Moreover, surface electrical resistance of the pinching side of the attachment component of the aforementioned couple of this invention which pinches flat-surface display at least is characterized by being chosen as the 106-ohm or more range of 109ohms or less. Moreover, the attachment component which does not have a \*\*\*\* field of the attachment components of the aforementioned couple of this invention is characterized by having the interior material of a proposal for inserting the light source in the position corresponding to the aforementioned viewing area. Moreover, the attachment component which the aforementioned drive circuit board of this invention has the connector area to which the signal cable for connecting with the external circuit which outputs a status signal is connected, and does not have a \*\*\*\* field of the attachment components of the aforementioned couple is characterized by having the interior material of a proposal which shows a signal cable to opening which the aforementioned connector area exposes, and the connector area exposed from the opening concerned, when flat-surface display is pinched by the attachment component of a couple. moreover, either of the attachment components of the aforementioned couple of this invention -- fitting of the couple which fits in mutually [ when an attachment component stops the stop member of the aforementioned couple ] -- either of the members -- it is characterized by having a fitting member and an another side attachment component having an another side fitting member Moreover, the stop member which the aforementioned attachment component of this invention has is characterized by being formed in the pinching side side which pinches flat-surface display, and forming the pressurization directions mark which indicates it to be the pinching side concerned to apply a pressure to the field corresponding to the stop member in order to stop the stop member of a couple to an opposite outside front face. Moreover, the aforementioned attachment component of this invention is characterized by having optical-absorption nature.

[0014]

[Function] If this invention is followed, flat-surface display will be pinched by the attachment component of the couple which a holder has, for example, will be dealt with at a manufacturing process and a transportation process. either of the attachment components of a couple -- the stop of the couple by which an attachment component is stopped mutually -- either of the members -- having a stop member, an another side attachment component has an another side stop member By pinching flat-surface display by the attachment component of a couple, and stopping the stop member of a couple, flat-surface display is arranged that there is no position gap \*\*\*\*\* in the position of a holder, and is held. When the field corresponding to the viewing area of a

display panel is a \*\*\*\* field and, as for the attachment component located in the screen side of a display panel of the attachment components of the aforementioned couple, stops the stop member of the aforementioned couple, the insertion mouth for inserting the light source in an opposite side with the screen of a display panel by the attachment component of the aforementioned couple is formed. When holding flat-surface display to such a holder and inspecting a display state by the inspection process which is one process in a manufacturing process, the light source is inserted from the aforementioned insertion mouth, and light is irradiated. The light from the light source is irradiated by the viewing area of a display panel, and outgoing radiation of the light which penetrated the display panel concerned is carried out from the \*\*\*\* field of the attachment component by the side of the screen.

[0015] Therefore, the screen of a display panel arranges the hard circuit board to an opposite side using a flexible wiring substrate, and even if it is the flat-surface display which attained miniaturization and thin form-ization, the light from the light source is irradiated all over a viewing area. For this reason, it can carry out holding inspection of a display state to a holder, and while the handling of flat-surface display becomes easy, breakage of flat-surface display decreases.

[0016] Moreover, preferably, the surface electrical resistance of the pinching side of the attachment component of the aforementioned couple which pinches flat-surface display at least is chosen as the or more 10<sup>6</sup> range of 10<sup>9</sup>ohms or less, and an antistatic function is added. This adds an antistatic agent into the material which forms an attachment component, and is realized by adjusting so that the surface electrical resistance of an attachment component may serve as the above-mentioned range. By this, flat-surface display can be protected from destruction by static electricity.

[0017] Moreover, preferably, since the attachment component which does not have a \*\*\*\* field of the attachment components of the aforementioned couple has the interior material of a proposal for inserting the light source in the position corresponding to the aforementioned viewing area, and the light source is easily inserted by the interior material of a proposal concerned and it is inserted in the optimal position, inspection of a display state can carry it out efficiently.

[0018] Moreover, the attachment component which the drive circuit board of the aforementioned flat-surface display has the connector area to which a signal cable is connected, and does not have a \*\*\*\* field has the interior material of a proposal which shows opening which the aforementioned connector area exposes, and the exposed connector area to a signal cable preferably. Therefore, connection of the signal cable for inputting a checking signal at the time of inspection of a display state can be made where flat-surface display is held by the holder, and it can connect easily by the interior material of a proposal.

[0019] moreover -- desirable -- either of the attachment components of a couple -- fitting of the couple which fits in mutually when an attachment component stops the stop member of the aforementioned couple ] -- either of the members -- having a fitting member, an another side attachment component has an another side fitting member Therefore, the guidance function and alignment function at the time of the fitting member of a couple pinching flat-surface display to the attachment component of a couple can be achieved, and pinching of the flat-surface display in the attachment component of a couple can be ensured [ easily and ].

[0020] Moreover, the stop member which the aforementioned attachment component has is preferably formed in the pinching side side which pinches flat-surface display. After arranging flat-surface display between the attachment components of a couple, the aforementioned stop member is stopped by putting a pressure toward the direction where an attachment component approaches the attachment component of the aforementioned couple according to the pressurization directions mark formed in the outside front face opposite to the aforementioned pinching side. Since the position on which a pressure is put by the pressurization directions mark becomes clear, putting a pressure on the portion which flat-surface display tends to damage decreases.

[0021] Moreover, preferably, since the aforementioned attachment component has optical-absorption nature, in case the light source is inserted and a display state is inspected, an unnecessary light of the light from the aforementioned light source is absorbed by the attachment component. For this reason, it can be lost that the light reflected irregularly by the attachment component carries out incidence to the viewing area of a display panel, it can inspect a display state correctly, and its reliability of an inspection result improves.

[0022]

[Example] Drawing 1 is the perspective diagram showing the state where the attachment components 2 and 3 of the holder 1 which is one example of this invention were opened. Drawing 2 is the perspective diagram showing the state where the attachment components 2 and 3 of a holder 1 were closed. drawing 3 -- the stop of a couple -- it is the perspective diagram in which expanding members 7 and 8, respectively and showing them As shown in drawing 1 , a holder 1 is mostly equipped with the attachment components 2 and 3 of a rectangle-like couple, pinches display which is later mentioned among the attachment components 2 and 3 concerned, and is used. One side side 2b of attachment components 2 and 3 and 3b are connected by the hinge region 4. Two hinge regions 4 connect in this example.

[0023] the side which pinches the display of attachment components 2 and 3 -- on the other hand -- front faces (henceforth a "pinching side") 2a and 3a -- the stop of the couple of plurality (this example 4) -- fitting of members 7 and 8 and the couple of plurality (this example 2) -- it has members 11 and 12 pinching side 2a -- on the other hand -- a stop -- a member 7 -- on the other hand -- fitting -- a member 11 -- having -- pinching side 3a -- an another side stop -- a member 8 and another side fitting -- it has a member 12 a stop -- members 7 and 8 are formed in four corners of attachment components 2 and 3, respectively fitting -- members 11 and 12 are formed in the corner of the side in which the hinge region 4 is not attached, respectively

[0024] The pinching sides 2a and 3a of attachment components 2 and 3 have the heights 13 and 14 for fixing so that the position gap of the pinched display may not be carried out. Pinching side 2a has heights 13, and pinching side 3a has heights 14. two or more (this example four) heights 13 and 14 are formed -- having -- a stop -- it is prepared in four corners of attachment

components 2 and 3 like members 7 and 8, respectively

[0025] Opening 5 is formed in the field corresponding to the viewing area of the display pinched by pinching side 2a of the attachment component 2 located in the screen side of display. Opening 6 is formed in the field corresponding to the connector area which display has in the attachment component 3 located in an opposite-side front face with the screen of display.

[0026] As shown in drawing 2, when attachment components 2 and 3 are closed, the insertion mouth 17 for inserting a back light module is formed of the other side sides 2c and 3c of an opposite side in the aforementioned one side sides 2b and 3b of attachment components 2 and 3. Therefore, notches 17a and 17b are formed in the other side sides 2c and 3c of attachment components 2 and 3, respectively. A back light module is easily inserted in the position corresponding to the viewing area of display by the interior material 16 of a proposal formed in pinching side 3a of an attachment component 3. From other side side 3c, on the other hand, toward side 3b, the interior material 16 of a proposal of this example is formed so that the height may become high.

[0027] The pressurization directions mark 18 of plurality (this example 4) is given to the another side front faces (henceforth a "outside front face") 2f and 3f of an opposite side, respectively in the pinching sides 2a and 3a by the side of display. From mark 18a which shows that the pressurization directions mark 18 concerned applies a pressure, and arrow mark 18b which shows the position which applies a pressure -- changing -- the aforementioned stop -- a member 7 and the eight neighborhoods are given pressurizing this mark 18 portion in the direction in which attachment components 2 and 3 approach -- a stop -- members 7 and 8 are stopped

[0028] moreover, the sides 2d, 3d, 2e, and 3e which are different in the sides 2b, 3b, 2c, and 3c of attachment components 2 and 3 and which counter mutually -- the stop of a couple -- it has members 9 and 10, respectively this example -- on the other hand -- 2d side of sides, and the 3d side -- an one and other side side 2e side and the 3e side -- one stop -- members 9 and 10 are formed, respectively the sides 2d and 2e by the side of an attachment component 2 -- on the other hand -- a stop -- a member 9 -- the sides 3d and 3e by the side of an attachment component 3 -- an another side stop -- the member 10 is formed, respectively the time of closing attachment components 2 and 3 -- a stop -- while members 7 and 8 are stopped -- the stop concerned -- members 9 and 10 are also stopped

[0029] drawing 4 -- a stop -- it is shown in drawing 4 (1) which is a cross section for explaining the engagement state of members 7, 8, 9, and 10 -- as -- a stop -- the member 7 of each other is arranged in parallel, and it has two lobes 7a and 7b formed in the direction which projects from the front face of an attachment component 2, and the interval of the lobes 7a and 7b concerned is formed so that it may become so large that it dies to a point moreover, a stop -- two lobes 8a and 8b formed in the direction which the member 8 of each other is arranged in parallel, and projects from the front face of an attachment component 3 -- having -- the interval of the lobes 8a and 8b concerned -- a stop -- it is formed so that it may become so narrow that it dies to a point on the contrary [ a member 7 ] moreover, a stop -- members 9 and 10 have the lobes 9a and 10a formed in the direction which projects from the front face of attachment components 2 and 3, respectively

[0030] the lobes 7a, 7b, 8a, and 8b which Lobes 7a and 7b fit in among the aforementioned lobes 8a and 8b, and have an interval which was mentioned above as shown in drawing 4 (2) when the position directed by the aforementioned pressurization directions mark 18 is pressurized in the direction of arrow mark 19a, i.e., the direction in which attachment components 2 and 3 approach, -- a stop -- members 7 and 8 are stopped Moreover, lobe 9a and 10a are hung. Thus, attachment components 2 and 3 are closed. the time of on the other hand opening attachment components 2 and 3 -- a stop -- a member 9 -- a stop -- the force of an attachment component 2-way in which a member 9 is formed -- a stop -- a member 10 -- a stop -- the force of attachment component 3 direction in which a member 10 is formed is applied, respectively Attachment components 2 and 3 move by this in the direction of arrow mark 19b, i.e., the direction in which attachment components 2 and 3 desert mutually.

[0031] Drawing 5 is the decomposition perspective diagram showing the composition of the display 21 held at the aforementioned holder 1. Drawing 6 is the perspective diagram showing the front face of display 21. Drawing 8 whose drawing 7 is the perspective diagram showing the rear face of display 21 is the side elevation expanding and showing hard circuit board 29 portion of display 21. Display 21 is constituted including a display panel 22, the flexible wiring substrates 23 and 24 in which the IC chip 25 was carried, a frame 26, and the hard circuit board 29.

[0032] A display panel 22 is realized by penetrated type display panels, such as for example, a liquid crystal display panel, and the terminal for inputting the signal for a display into the periphery section is pulled out. In this example, the aforementioned terminal is pulled out by two sides 22b and 22c in which a display panel 22 adjoins mutually, and the terminal of the flexible wiring substrates 23 and 24 is connected to the terminal concerned, respectively. A display panel 22 has viewing-area 22a defined beforehand, and this viewing-area 22a is equivalent to the viewing area of display 21.

[0033] With the screen of a display panel 22, the frame 26 of the shape of a rectangle holding a display panel 22 is arranged at an opposite side. Opening 26a is formed in the field corresponding to viewing-area 22a of a display panel 22 at the frame 26. the insertion to which the aforementioned heights 14 are inserted in four corners of a frame 26 when it holds to a holder 1 -- the hole 27 is formed, respectively Moreover, the notch 31 for inserting a back light module between a display panel 22 and the hard circuit board 29 is formed in the frame 26. The notch 31 is formed in different side 26b from the near side in which the flexible wiring substrates 23 and 24 of a display panel 22 are arranged.

[0034] The hard circuit board 29 is arranged in the display panel 22 of a frame 26 in the position corresponding to the flexible wiring substrates 23 and 24 by which the aforementioned IC chip 25 was carried in the opposite side.

[0035] the insertion for positioning by which the flexible wiring substrates 23 and 24 and the hard circuit board 29 were formed in substrates 23, 24, and 29 and a frame 26 concerned -- Holes 23a, 23b, 24a, 28, 29a, and 29b position and connect a display panel 22 -- on the other hand -- the side 22b side -- the turn from a screen side -- insertion -- heavy doubling \*\*\*\*\* is carried

out at the order of Holes 23a, 28, 29a, and 23b -- having -- the other side side 22c side -- the same -- the turn from a screen side -- insertion -- heavy doubling \*\*\*\*\* is carried out at the turn of Holes 29b and 24a. Thus, by using the flexible wiring substrates 23 and 24, it becomes possible to arrange the hard circuit board 29 to an opposite side with the screen of a display panel 22, and the miniaturization of display 21 can be attained. In addition, the connector area 30 by which the signal for the display from an external circuit is given to an opposite side is formed in the hard circuit board 29 in the frame 26 of the hard circuit board 29 concerned.

[0036] Drawing 9 is in the state which opened the attachment components 2 and 3 of a holder 1, and is the perspective diagram showing the state where display 21 has been arranged. drawing 10 -- insertion -- it is the cross section expanding and showing the state where heights 14 were inserted in a hole 27. Drawing 11 is the perspective diagram showing the rear face of a holder 1 in the state where have arranged display 21 and the attachment components 2 and 3 of a holder 1 were closed. In case the display 21 which was mentioned above is held to a holder 1, where the attachment components 2 and 3 of a holder 1 are opened first, the screen of display 21 becomes an attachment component 2 side, and as an opposite side becomes an attachment component 3 side, as for the screen, it arranges display 21 on an attachment component 3. the insertion which the frame 26 of display 21 has at this time -- the heights 14 of an attachment component 3 are inserted in a hole 27

[0037] As shown in drawing 10, heights 14 consist of truncated-cone-like heights 14a and heights 14b of the shape of a pillar with the diameter still smaller than the smallest diameter of the aforementioned heights 14a, and heights 14a convex section 14b is prepared. moreover, insertion -- the insertion with a circular hole 27 -- a hole -- 27a and its diameter -- the aforementioned insertion -- circular insertion smaller than a hole 27 -- from hole 27b -- changing -- insertion -- a hole -- 27b top -- insertion -- a hole -- 27a is formed the time of having arranged display 21 to the attachment component 3 -- first -- heights 14b -- meeting -- insertion -- a hole -- 27a is guided this time -- the diameter of heights 14b -- comparing -- insertion -- a hole -- guidance of display 21 can be smoothly performed by forming so that the direction of the diameter of 27a may become large next, heights 14b -- insertion -- a hole -- 27b -- moreover, heights 14a -- insertion -- a hole -- it is inserted in 27a, and display 21 can be fixed by making both diameter almost of the same grade, without shaking horizontally to the screen thus, the level difference portion of heights 27a and heights 27b and insertion -- a hole -- 27a and insertion -- a hole -- when a level difference portion with 27b contacts mutually, the position of display 21 is decided

[0038] then -- if attachment components 2 and 3 are closed as mentioned above -- fitting of a couple -- members 11 and 12 -- fitting in -- a stop -- members 7 and 8 and a stop -- members 9 and 10 are stopped the heights 13 prepared in the attachment component 2 at this time -- insertion -- the portion in which a hole 27 is formed is contacted. Therefore, display 21 can be fixed, without shaking perpendicularly to the screen.

[0039] Moreover, as shown in drawing 11, from the opening 6 of an attachment component 3, the connector area 30 prepared in the hard circuit board 29 of display 21 is exposed. With pinching side 3a of an attachment component 3, in order to connect a signal cable to the connector area 30 exposed from opening 6 easily, the interior material 20 of a proposal which shows a connector area 30 to the aforementioned signal cable is formed in 3f of outside front faces of an opposite side.

[0040] in addition, the insertion prepared in attachment components 2 and 3, respectively when attachment components 2 and 3 were closed -- the insertion which Holes 15a and 15b are in agreement, and is open for free passage from an attachment component 2 to an attachment component 3 -- a hole 15 is formed this insertion -- in case it is used in case a hole 15 inspects a display state, for example, it inspects two or more display, it is used for positioning for arranging a viewing angle. Dispersion in an inspection result can be reduced by this.

[0041] It is the cross section cut by cutting plane line I-I of aforementioned drawing 11, and as drawing 12 was mentioned above, it holds display 21 by the holder 1, and shows the state in the inspection process which is one process in the manufacturing process of display 21, respectively. Drawing 12 (1) shows the state before inserting the back light module 32, and drawing 12 (2) shows the state where the back light module 32 was inserted.

[0042] As shown in drawing 12 (1), the holder 1 by which display 21 was held has the insertion mouth 17 which inserts the back light module 32. From this insertion mouth 17, the edge light type back light module 32 is inserted. The back light module 32 is constituted including the light source 33, a reflecting plate 34, and a light guide plate 35. The light source 33 is formed in the one side edge of a light guide plate 35, and it is reflected by the reflecting plate 34 and it carries out incidence of the light from the light source 33 concerned to a light guide plate 35. A light guide plate 35 irradiates the light from the light source 33 uniformly at the almost same area as the viewing area of a display panel 22. The thickness is thin and a light guide plate 35 is inserted in the aforementioned insertion mouth 17 from an other side side as it goes to the other side side which counters the one side side concerned from the one side side in which the light source 33 was formed. A light guide plate 35 is guided by the interior material 16 of a proposal formed in the attachment component 3, and is inserted in an opposite side with the screen of a display panel 22. Thus, if the back light module 32 is inserted, incidence of the light from the light source 33 will be uniformly carried out to the viewing area of a display panel 22. Outgoing radiation of the light from a display panel 22 is carried out from the opening 5 formed in the attachment component 2.

[0043] From the insertion mouth 17 side, in the insertion mouth 17 concerned, since the interval of an attachment component 2 and an attachment component 3 becomes narrow toward an opposite side, it is equipped with the light guide plate 35 of the aforementioned back light module 32 by the aforementioned interior material 16 of a proposal, without equipping an opposite side with the screen of a display panel 22, and shaking.

[0044] Drawing 13 is the perspective diagram showing the connection method of a signal cable 36. Drawing 14 is the cross section expanding and showing the neighborhood which connected the signal cable 36 to the connector area 30. In case a signal cable 36 inspects the display state mentioned above, it is for giving a checking status signal to display 21 from an external



circuit, for example, is realized by the FURESHI kibble wiring substrate. In addition, the about 0.3mm polyester board is stuck on the point 37 for reinforcement. By inserting such a signal cable 36 in a connector area 30 along with the interior material 20 of a proposal, a part for a part for the terminal area of a connector area 30 and the terminal area of the point 37 of a signal cable 36 is connected, and the checking signal from an external circuit is supplied through a signal cable 36.

[0045] It is formed so that the height may become low gently toward the direction of a connector area 30, and the height is still lower by about 30 connector area further so that the point 37 of a signal cable 36 may tend to insert the interior material 20 of a proposal in a connector area 30. In this example, although the interval was opened and such four interior material 20 of a proposal is formed, as mentioned above, as long as the interior material 20 of a proposal is the configuration which the point 37 of a signal cable 36 tends to insert in a connector area 30, it may be what configuration.

[0046] According to this example, it can carry out as mentioned above, holding inspection of a display state by the holder 1, even if it was the display 21 which the screen of a display panel 22 has arranged the hard circuit board 29 to the opposite side, and equipped with the edge light type back light module 32, and attained miniaturization and thin form-ization. Therefore, the handling of display 21 becomes easy and a possibility that display 21 may be damaged decreases. For this reason, while working efficiency improves, a manufacturing cost decreases.

[0047] Moreover, the attachment components 2 and 3 of a holder 1 are formed for example, by the injection molding method. As a material used, although polypropylene is used, for example, by adding an antistatic agent into the material concerned at this time, an antistatic function can be added to attachment components 2 and 3, and display 21 can be protected from destruction by static electricity. As an antistatic agent, the antistatic agent of a carbon system can be used, for example. It is desirable to make it the surface electrical resistance of the pinching sides 2a and 3a serve as [ of the formed attachment components 2 and 3 ] the 106-ohm or more range of 109ohms or less at least, and a good antistatic function can be added by adding the aforementioned antistatic agent so that it may become such a range. If surface electrical resistance is 109ohms or less, sufficient antistatic effect will be acquired. In addition, if surface electrical resistance becomes smaller than 106 ohms, conductivity will come to be shown and short-circuit will occur among interior parts, such as the IC chip 25, the flexible wiring substrate 23, and the hard circuit board 29.

[0048] Moreover, by adding optical-absorption nature to a holder 1, it can be lost that the light from the back light module 32 reflects irregularly at the time of inspection, it can inspect correctly, and the reliability of an inspection result improves. Addition of such optical-absorption nature is easily realizable by adding the antistatic agent of a carbon system, in order to add an antistatic function, as it can realize by making a holder 1 into the dark color, for example, being mentioned above.

[0049] in addition, a stop -- members 7 and 8 and a stop -- members 9 and 10 and fitting -- as long as it can fully prevent the vibration and the shock over the display 21 which does not restrict the position or number of members 11 and 12 to this example, and is held, you may form in any position and the number may also be how much moreover -- on the other hand -- a stop -- a member 7 -- the another side attachment component 3 -- an another side stop -- a member 8 -- on the other hand -- an attachment component 2 -- respectively -- you may form -- a stop -- members 9 and 10 and fitting -- the same is said of members 11 and 12

[0050] Drawing 15 is the perspective diagram showing the example which equips the holder 1 of this example with the back light module 41 of a direct viewing type. The back light module 41 of a direct viewing type is equipped with the light source 42 and a reflecting plate 43. The light source 42 makes one fluorescent lamp crooked, and is arranged to the field of the almost same area as a viewing area, it reflects by the reflecting plate 43 and, on the other hand, the light from the light source 42 concerned is irradiated by the direction. It is also possible to insert such a back light module 41 of a direct viewing type from the insertion mouth 17 of the holder 1 of this example. This can be carried out when it is the display with which thin form-ization is not demanded comparatively. At the time of inspection of a display state, the light from the light source 42 reflected by the reflecting plate 43 carries out incidence to viewing-area 22a of a display panel 22.

[0051]

[Effect of the Invention] Even if the flat-surface display held at the holder is the display which attained miniaturization and thin form-ization as mentioned above according to this invention, since the light from the light source inserted in the holder is irradiated all over the viewing area of a display panel, inspection of the display state of flat-surface display can be conducted holding to a holder, and the handling of flat-surface display becomes easy, and fear of breakage decreases. Therefore, while working efficiency improves, a manufacturing cost decreases.

[0052] Moreover, the flat-surface display held by adding an antistatic function can be protected from destruction by static electricity.

[0053] Moreover, the aforementioned light source is inserted easily and certainly in a position by the interior material of a proposal. Moreover, a signal cable can be connected to a connector area, with flat-surface display held. Therefore, the working efficiency of inspection improves.

[0054] Moreover, since guidance and alignment of the attachment component of a couple are performed by the fitting member of a couple, flat-surface display can be held easily and certainly.

[0055] Moreover, applying a pressure to flat-surface display accidentally, and damaging flat-surface display by the pressurization directions mark formed corresponding to the stop member, since the position which applies a pressure becomes clear in order to stop a stop member decreases.

[0056] Moreover, by the optical-absorption nature which an attachment component has, the scattered reflection of the light from the light source with which it was equipped is prevented, a display state can be inspected correctly, and the reliability of an inspection result improves.



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[Translation done.]

**\* NOTICES \***

**Japan Patent Office is not responsible for any damages caused by the use of this translation.**

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

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**CLAIMS**

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[Claim(s)]

[Claim 1] In the holder of the flat-surface display which is equipped with the following and displays by arranging the light source to an opposite side with the screen of the aforementioned display panel, and penetrating / intercepting light from the light source concerned the aforementioned holder It has the attachment component of the couple which is arranged with the screen [ of a display panel ], and screen side concerned at an opposite side, respectively, and pinches flat-surface display. The attachment component located in the screen side of a display panel of the attachment components of a couple The field corresponding to the aforementioned viewing area is a \*\*\*\* field. either of the attachment components of a couple an attachment component the stop of the couple stopped mutually [ when the attachment component of a couple has been arranged face to face ] -- either of the members -- by the attachment component of the aforementioned couple, when it has a stop member, an another side attachment component has an another side stop member and the stop member of a couple is stopped The holder of the flat-surface display characterized by forming the insertion mouth for inserting the light source in an opposite side with the screen of a display panel. The display panel which has the viewing area defined beforehand. The drive circuit board which carried the drive circuit which gives a status signal to the aforementioned display panel. The flexible substrate which arranges the aforementioned drive circuit board to an opposite side with the screen of a display panel, and connects the drive circuit board and a display panel concerned electrically.

[Claim 2] The surface electrical resistance of the pinching side of the attachment component of the aforementioned couple which pinches flat-surface display at least is the holder of the flat-surface display according to claim 1 characterized by being chosen as the 106-ohm or more range of 109ohms or less.

[Claim 3] The attachment component which does not have a \*\*\*\* field of the attachment components of the aforementioned couple is the holder of the flat-surface display according to claim 1 characterized by having the interior material of a proposal for inserting the light source in the position corresponding to the aforementioned viewing area.

[Claim 4] The holder of the flat-surface display according to claim 1 characterized by providing the following. The attachment component which the aforementioned drive circuit board has the connector area to which the signal cable for connecting with the external circuit which outputs a status signal is connected, and does not have a \*\*\*\* field of the attachment components of the aforementioned couple is opening which the aforementioned connector area exposes when flat-surface display is pinched by the attachment component of a couple. Interior material of a proposal which shows the connector area exposed from the opening concerned to a signal cable.

[Claim 5] either of the attachment components of the aforementioned couple -- fitting of the couple which fits in mutually [ when an attachment component stops the stop member of the aforementioned couple ] -- either of the members -- the holder of the flat-surface display according to claim 1 characterized by having a fitting member and an another side attachment component having an another side fitting member

[Claim 6] The stop member which the aforementioned attachment component has is the holder of the flat-surface display according to claim 1 characterized by being formed in the pinching side side which pinches flat-surface display, and forming the pressurization directions mark which indicates it to be the pinching side concerned to apply a pressure to the field corresponding to the stop member in order to stop the stop member of a couple to an opposite outside front face.

[Claim 7] The aforementioned attachment component is the holder of the flat-surface display according to claim 1 characterized by having optical-absorption nature.

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[Translation done.]